Benchmark™ LP

Low-Profile Bench Scale

Installation Manual

RICE LAKE™ WEIGHING SYSTEMS
Commitment Beyond Measurement®

ISO 9001 REGISTERED

104742

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Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at www.ricelake.com or obtained by calling 715-234-9171 and asking for the training department.

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About This Manual

This manual is intended for use by service technicians responsible for installing and servicing the Benchmark™ LP low-profile bench scale.

Warning *Some procedures described in this manual require work inside the summing board enclosure. These procedures are to be performed by qualified service personnel only.*

Authorized distributors and their employees can view or download this manual from the Rice Lake Weighing Systems distributor site at **www.ricelake.com**.

1.0 Introduction

The Benchmark LP is a four-cell, low-profile scale. Features include:

- Available in sizes from 18 in. x 18 in (.46 m x 46 m) to 36 in x 36 in (.91 m x .91 m).
- Capacities from 100 to 1000 lbs (45 - 453 kg).
- Fully electronic low-profile load receivers.
- Four corner-mounted, FM-approved planar beam load cells.
- Signal-trim summing board for any necessary corner corrections, mounted under a stainless steel cover that can be sealed for legal-for-trade.
- All models come pre-trimmed; corner corrections should not be necessary.
- Load cell cables are held down with replaceable cable ties near each corner.
- Adjustable feet can be used to allow leveling of the scale to compensate for minor floor irregularities.
- Holes are located in the lower frame to be used for permanent mounting applications.

Model Designations

The model identification label is located on the side of the frame. Include both model number and serial number when ordering replacement parts.

Electrical Grounding

For systems where the scale is connected to a 115 VAC circuit, the indicator must be directly connected to an earth ground with a ground interface cable of no more than 3Ω resistance throughout its length.

Load Cells

- Four (4) Rice Lake RLBLP (planar beam)
- Rated Excitation: 5-15 VDC

Grade Level Requirement

The supporting surface of the scale (encompassing four feet) must be level within $^1/_4$ in of horizontal.

End Load Capacity

60% of full scale capacity.

Platform Dimensions, Capacity, and Torque Specs

Part Number	Capacity	Platform Dimensions (LxWxH)	Torque To
97662	100 lbs.	18” x 18” x 1.67” (2.63“ with leveling feet)	50 LBS PER IN
97663	250 lbs.	18” x 18” x 1.74” (2.50“ with leveling feet)	125 LBS PER IN
97664	500 lbs.	18” x 18” x 1.93” (2.69“ with leveling feet)	125 LBS PER IN
97665	100 lbs.	24” x 24” x 1.69” (2.66“ with leveling feet)	50 LBS PER IN
97666	250 lbs.	24” x 24” x 2.07” (2.83“ with leveling feet)	125 LBS PER IN
97667	500 lbs.	24” x 24” x 2.26” (3.02“ with leveling feet)	125 LBS PER IN
97668	500 lbs.	30” x 30” x 2.26” (3.02“ with leveling feet)	125 LBS PER IN
97669*	1000 lbs.	30” x 30” x 2.70” (3.47“ with leveling feet)	20 LBS PER FT
97670	500 lbs.	36” x 36” x 2.26” (3.02“ with leveling feet)	125 LBS PER IN
97671*	1000 lbs.	36” x 36” x 2.70” (3.47“ with leveling feet)	20 LBS PER FT

Table 1-1. Platform dimensions and capacity

*Non-NTEP

2.0 Installation

Standard installation of the Benchmark™ LP floor scale consists of the following steps:

- Select a site
- Check levelness and smoothness of site
- Unpack scale
- Adjust the four feet on the scale
- Connect cable to summing board and indicator
- Calibrate the unit

2.1 Site Preparation

The scale must not be loaded beyond its capacity, even momentarily. Do not select a site where overweight loads would have to maneuver to avoid crossing the platform. Avoid areas where the scale might receive damaging side impacts from wheels or forklift tines, or shock damage from falling objects. Avoid areas where water may damage the scale.

The interface cable between the scale and the indicator must be protected against crushing, cutting, or moisture damage. If the chosen site has such potential dangers, some method of protection, such as running the cable in conduit, will be necessary.

In operation, the scale must be level within $^1/_4$ inch. Either choose a site where the floor is close to this standard to avoid excessive shimming, or modify the floor at the chosen site to meet this standard.

2.2 Unpacking and Assembly

1. Remove all packing material and inspect scale for visible damage caused during shipment.
2. Remove the four overload stops on the underside of the scale, shown in Figure 2-1.

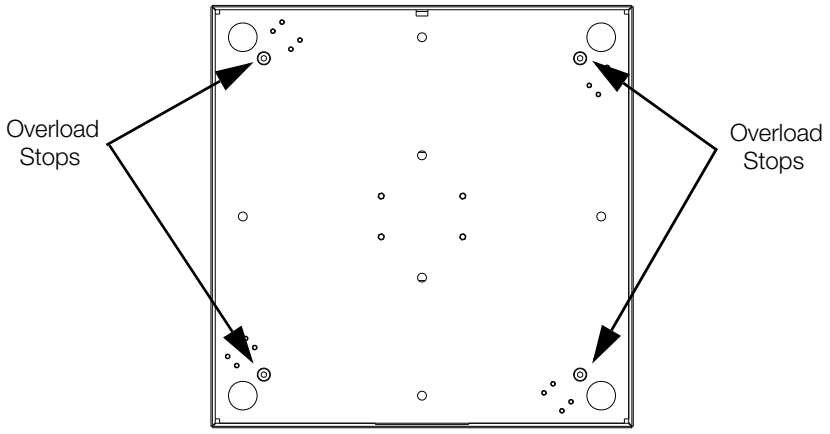

Figure 2-1. Overload Stops to be Removed (4)

3. Remove the black scale cover.
4. Remove the summing board cover in the center of the scale.
5. Wire the homerun cable. Refer to instructions in Section 2.3 on page 3.
6. Properly secure the cable with nylon ties (supplied).
7. Using the bubble level next to the summing board, ensure the scale is level.
8. Replace the black scale cover and use the four mounting screws to secure it in place.
9. If necessary, perform a corner correction. See Section 3.2 on page 5.
10. Replace the summing board cover.
11. Replace the black center cover.
12. Set the stainless steel cover on the scale.

2.3 Summing Board Security

After an NTEP inspector has examined the unit, he/she will install security cables on the summing board cover. These cables prevent the summing board from being tampered with by an unauthorized individual. If these cables are removed, NTEP Certification will become void.

Figure 2-2. Summing board cover with security cables installed

2.4 Electrical Interface to Indicator

Twenty feet of 6-wire cable to connect the scale to the weight indicator is supplied with each scale. Both ends have the wires stripped and tinned.

To access the summing board,

1. Remove the stainless steel platform.
2. Remove lid in the center of the platform, revealing the summing board coverplate.
3. Remove security cables (this will void NTEP Certification).
4. Remove screws on the summing board coverplate and remove lid.

Wire Connections

Remove the summing board cover and connect the wires to the INDICATOR terminal (Figure 2-3). To connect the indicator wires to the appropriate connectors, push in the quick connect lever with a small screwdriver or ballpoint pen. When holding the lever, insert the appropriate wire into the exposed wire opening.

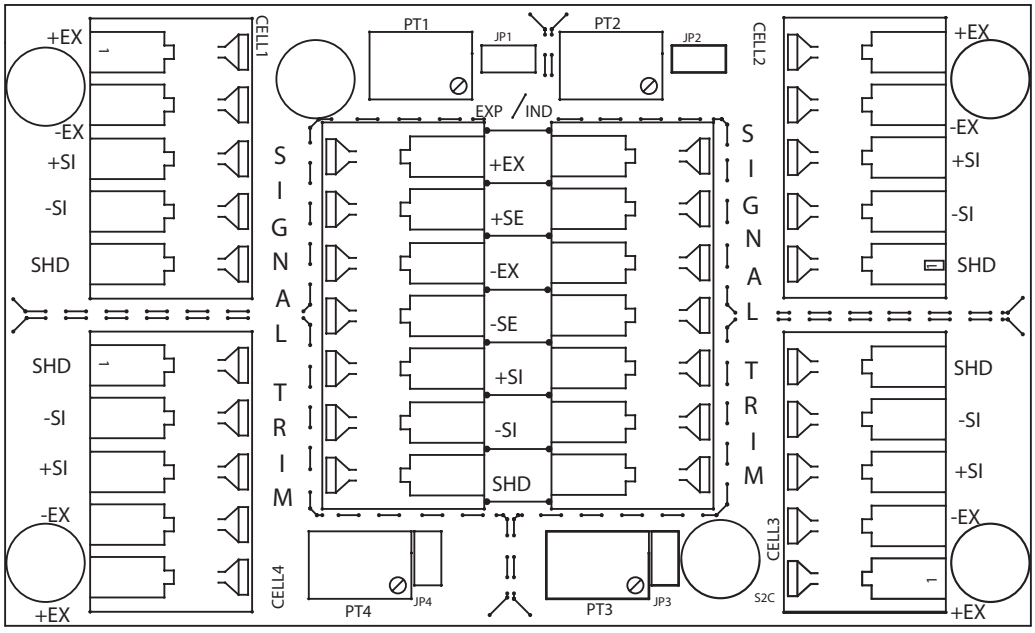

Figure 2-3. Summing board indicator terminal

Cable Routing

The cable must be routed to the indicator in a manner that will protect the cable from damage. When planning cable routing, leave a loose coil of excess cable under the scale to facilitate future lifting of the scale for servicing or cleaning.

1. When the interface cable is protected and in its final position, complete connections to the indicator. See indicator installation manual for wiring information.
2. If necessary, trim corners as described in Section 3.2 on page 5.
3. Check all strain relief for tightness.

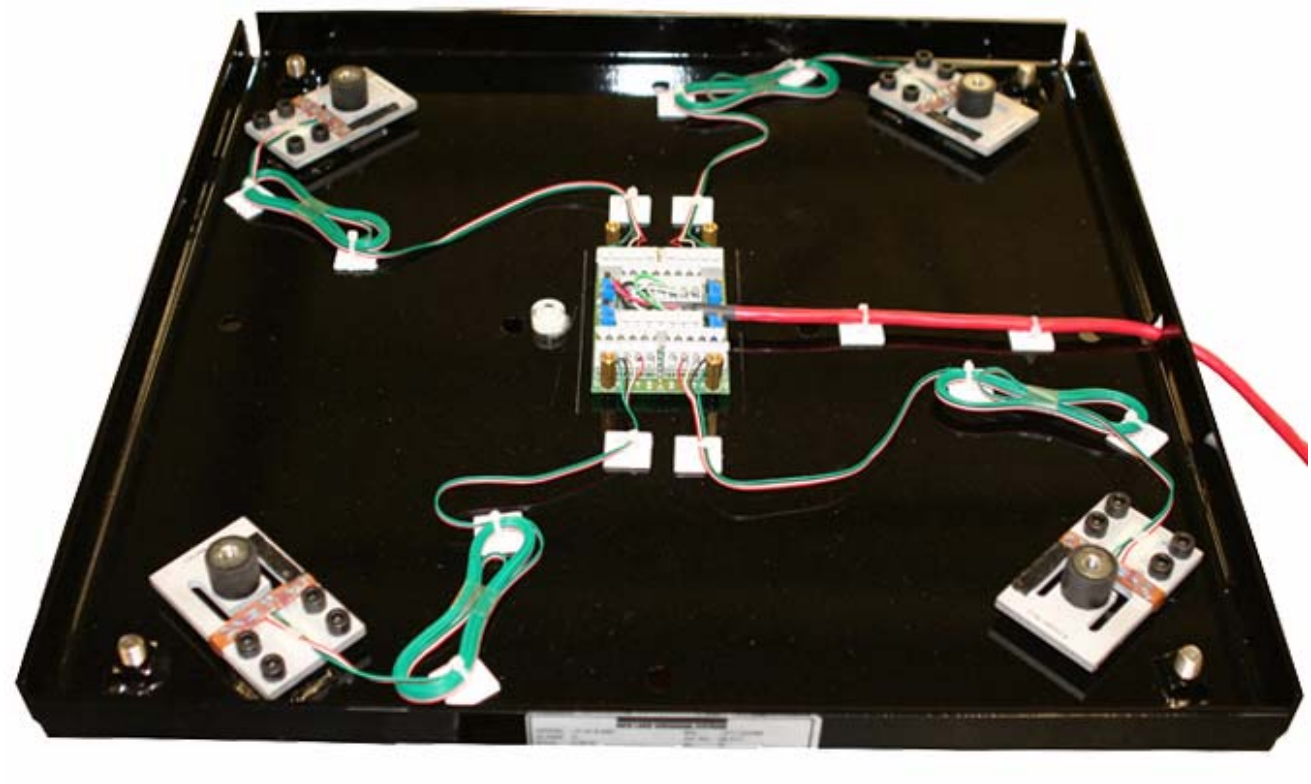

Figure 2-4. Homerun cable wired to summing board and secured with nylon ties

3.0 Adjustments and Calibration

3.1 Mechanical Adjustments

To accommodate minor floor unevenness, scale feet can be used to adjust scale height up or down a fraction of an inch. Adjust the feet by hand (lift the scale corner slightly with a pry bar) until all feet are contacting the floor equally. Jam nuts are supplied for locking the feet in place.

When height adjustments are complete, recheck level of the deck with a spirit level. The deck must be level within $^1/_4$".

3.2 Corner Correction

All assembled Benchmark™ LP scales are delivered with the summing board corner-trimmed. Corner trimming is only necessary after replacing a load cell.

To calibrate the scale, the output from each load cell must be matched by adjusting the signals with potentiometers at the summing board—a process known as trimming.

1. Remove the summing board cover and identify the correct load cell terminal corresponding to each corner (labeled CELL 1, CELL 2, and so on). See Figure 4-3 on page 8 for scale deck corner numbering.
2. The indicator must be connected and calibrated approximately, but it need not indicate the exact weight value. A test weight will be required. The recommended test weight for all Benchmark™ LP models is 25% of scale capacity: for example, 25 lbs for 100-lb models, 250 lbs for 1000-lb models.
3. With no weight on the scale, zero the indicator.
4. Turn all four potentiometers fully clockwise (shaded areas of Figure 3-1) to increase the reading until a clicking sound is heard from each potentiometer. This ensures the maximum signal from each load cell.

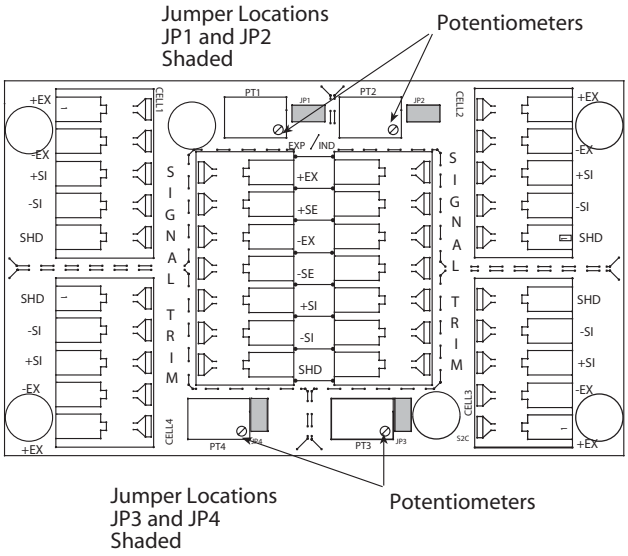

Figure 3-1. Trim Potentiometers

5. Zero the indicator and place 25% of scale capacity using calibrated test weights over each load cell in turn.
6. Record the value displayed on the indicator after the test weight is placed in turn on each corner (directly over the load cell) without allowing the weight to overhang the sides. Allow the scale to return to zero each time to check for friction or other mechanical problems. Select the load cell which has the lowest value as your reference point. This cell will not be trimmed.
7. Replace the same test load over each cell in turn. Using the corresponding potentiometer, trim each cell down to equal the reference load cell. As corner corrections are somewhat interactive, check all cells again for repeatability. If necessary, repeat steps 5 and 6.

3.3 Calibration Procedure

Refer to the indicator manual to determine correct calibration procedures.

It is recommended that the scale be "exercised" before calibration to be certain that everything is seated.

1. Load the scale to near capacity two or three times.
2. With no load on the scale, place the indicator in its calibration mode and perform a zero calibration.
3. Place test weights on the platform not exceeding the scale's full capacity. If several weights are used, they should be evenly distributed around the platform.
4. Perform a span calibration.

4.0 Service Information

4.1 Troubleshooting Guide

System does not operate—no display

- Power disconnected: Check and reconnect.
- Indicator fuse blown. Replace fuse. Check for cause.
- Interface cable cut or disconnected: Repair.
- Signal leads incorrectly installed at indicator: Install according to indicator installation manual

Display stays at zero

- Indicator faulty: Service indicator
- Load cell connections faulty: Check cable connections in summing board and at indicator

Erratic weights

- Vibration near scale: Remove source of vibration or move scale.
- Platform not level to within $^1/_4$ in: Level scale by adjusting feet or shimming if necessary.
- Load cell or cable water damage: Replace.
- Debris under load cells or platform: Clean.
- Indicator faulty: Use simulator to test indicator for stability. Service indicator.

Consistently high or low weights

- Indicator not properly adjusted to zero: Zero the indicator according to indicator manual.
- Platform binding: Obtain adequate clearance for free platform movement.
- Indicator not calibrated: Calibrate according to indicator manual and Section 3.3
- Load cells faulty: Test and replace load cells if necessary.
- Feet touching deck underside: Adjust feet downward to provide clearance.

4.2 Periodic Maintenance

The space beneath the platform must be periodically cleaned to prevent debris buildup.

Caution Do not attempt to use scales with load cells that are not hermetically sealed in washdown applications. Water damage is a common cause of failure in non-hermetically-sealed load cells. Use care with high pressure steam washdowns for hermetically-sealed load cells. The steam may not damage the load cells, but the elevated temperatures may cause incorrect readings until the unit cools to room temperature.

4.3 Load Cell Replacement

Replacement load cells can be ordered from Rice Lake Weighing Systems according to the part numbers in Table 4-2 on page 8. Refer to Table 1-1 on page 1 for torque settings.

1. Remove defective load cells.
2. Disconnect load cell cable from summing board and cut cable ties.

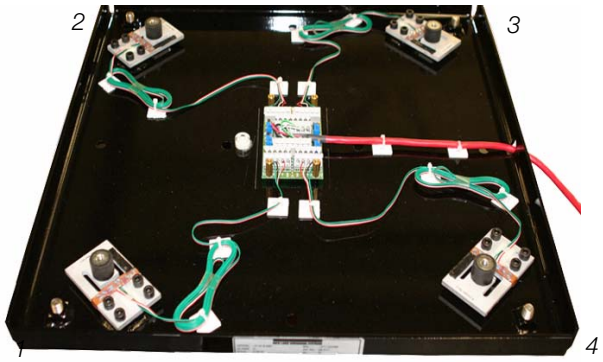

Figure 4-1. Load Cell Arrangement

3. When the cable is freed, pull cable out of the scale.
4. Lay out each load cell near the corner where it is to be installed.
5. Attach the cable from each load cell along the frame and into the summing board as shown in Figure 4-1.

NOTE: *In Figure 4-1, both the scale and the summing board are viewed from the top. To verify correct load cell/summing board terminal matching, see the numbers on the terminals inside the summing board.*

6. Check that the threaded holes for the load cell screws are free of debris. Use compressed air to blow out holes if necessary.

7. Position load cells with capacity label and load cell wires facing up, and loosely install the hex head cap screws (provided).
8. Route the load cell cables along the frame to the summing board.
9. Secure the cable in position with the adhesive-backed cables tied supplied in the hardware kit. See Figure 4-2 for an illustration of load cell and cable placement.

NOTE: *Do not cut load cell cables.*

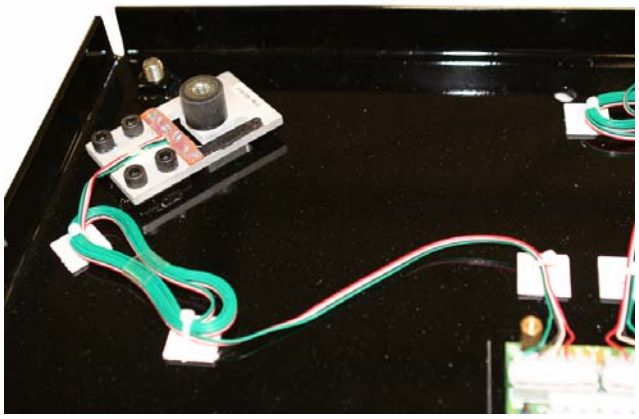

Figure 4-2. Load cell and wire placement

10. Corner correction trimming and calibration is necessary after load cell replacement. Follow the instructions in Section 3.2 and Section 3.3.

4.3.1 Load Cell Wiring to Summing Board

The four load cells are each wired to their respective terminals in the summing board according to the corner numbering system shown in Figure 4-3 and the coloring code in Table 4-1.

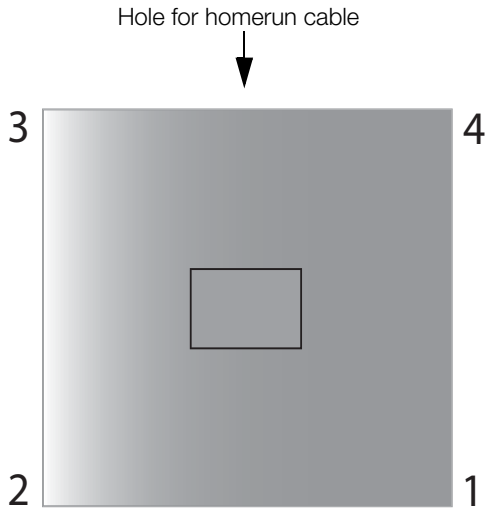

Figure 4-3. Corner numbering (top view)

Cable Color Code	Summing Board Terminal
Green	+ Excitation
Black	- Excitation
White	+ Signal
Red	- Signal

Table 4-1. Load Cell Wiring

4.4 Replacement Load Cells

Capacity of Scale	Load Mount	Load Cell
100 lbs	96823	100272
250 lbs	96824	104645
500 lbs	96825	100273
1000 lbs	96826	100274

Table 4-2. Replacement load cells

Benchmark LP Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for two years.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:|

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

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RLWS AND BUYER AGREE THAT RLWS' SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

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